

WHAT IS CLAIMED IS:

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1. An iron compound catalyst for inhibiting the generation of dioxin, comprising iron oxide particles, iron oxide hydroxide particles or mixed particles thereof having a catalytic activity capable of converting not less than 15 % of carbon monoxide into carbon dioxide when  $2.8 \times 10^{-4}$  mol of iron oxide particles obtained by heat-treating said iron compound catalyst in air at a temperature of  $800^{\circ}\text{C}$  for 15 minutes, are instantaneously contacted with  $6.1 \times 10^{-7}$  mol of carbon monoxide at a temperature of  $250^{\circ}\text{C}$  at a space velocity (SV) of  $42,400 \text{ h}^{-1}$  in an inert gas atmosphere using a pulse catalytic reactor,

said iron oxide particles or said iron oxide hydroxide particles having an average particle size of 0.01 to  $2.0 \mu\text{m}$ , a BET specific surface area of 0.2 to  $200 \text{ m}^2/\text{g}$ , a phosphorus content of not more than 0.02 % by weight, a sulfur content of not more than 0.6 % by weight and a sodium content of not more than 0.5 % by weight.

2. An iron compound catalyst for inhibiting generation of dioxin according to claim 1, wherein the average particle size is 0.02 to  $1.0 \mu\text{m}$ ; the BET specific surface area is 0.5 to  $100 \text{ m}^2/\text{g}$ ; the phosphorus content is not more than 0.005 % by weight; the sulfur content is not more than 0.1 % by weight; and the sodium content is not more than 0.2 % by weight.

3. An iron compound catalyst for inhibiting generation of dioxin according to claim 1, wherein the catalytic activity capable of converting of carbon monoxide into carbon dioxide is not less than 20 % when  $2.8 \times 10^{-4}$  mol of iron oxide particles obtained by heat-treating the iron compound catalyst in air at a temperature of 800°C for 15 minutes, are instantaneously contacted with  $6.1 \times 10^{-7}$  mol of carbon monoxide at a temperature of 250°C at a space velocity (SV) of 42,400 h<sup>-1</sup> in an inert gas atmosphere using a pulse catalytic reactor.

4. An iron compound catalyst for inhibiting generation of dioxin according to claim 1, wherein said iron compound catalyst comprises aggregates comprising said iron oxide particles, said iron oxide hydroxide particles or the mixed particles thereof,

said aggregates having a specific surface area of not less than 1.0 m<sup>2</sup>/cm<sup>3</sup> when measured under a feed pressure of 1 bar in a dry granulometer, and an average particle size (D<sub>50</sub>) of 50 % of a total volume thereof, of not more than 8.0 μm.

5. An iron compound catalyst for inhibiting generation of dioxin according to claim 4, wherein the specific surface area of said aggregates is not less than 1.2 m<sup>2</sup>/cm<sup>3</sup> when measured

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under a feed pressure of 1 bar in a dry granulometer, and the average particle size ( $D_{50}$ ) is not more than 7.0  $\mu\text{m}$ .

6. An iron compound catalyst for inhibiting generation of dioxin according to claim 4, wherein said aggregates comprise said iron oxide particles, said iron oxide hydroxide particles or the mixed particles thereof as defined in claim 2.

7. An incineration process of a municipal solid waste, comprising:

spray-introducing said iron compound catalyst as defined in claim 1 in an amount of 0.01 to 5.0 % by weight per hour based on the weight of a dry municipal solid waste, into a combustion chamber of an intermittently operated incinerator by a gas carrying method to contact said iron compound catalyst with a combustion gas.

8. An incineration process according to claim 7, wherein said gas carrying method is an air carrying method or a nitrogen gas carrying method, and the amount of said gas is 1 to 20 % by volume based on the total volume of combustion air fed into said combustion chamber.

9. An incineration process according to claim 7, wherein said iron compound catalyst comprises the aggregates as defined in claim 4.

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10. An incineration process according to claim 7, wherein the amount of said iron compound catalyst spray-added is 0.1 to 1.0 % by weight per hour based on the weight of the dry municipal solid waste.

11. An incineration process of municipal solid waste, comprising:

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spray-adding said iron compound catalyst as defined in claim 1 into the combustion chamber of the intermittently operated incinerator by a gas carrying method while supplying a secondary gas toward a tip end of combustion flame in the combustion chamber of the intermittently operated incinerator to uniformly disperse said iron compound catalyst in the combustion chamber, thereby contacting said iron compound catalyst with a combustion gas.

12. An incineration process according to claim 11, wherein the gas of said secondary gas is air, a nitrogen gas or a combustion exhaust gas.

13. An incineration process according to claim 11, wherein the amount of said secondary gas is 1 to 40 % by volume based on the total volume of the combustion air fed into said combustion chamber.

14. A method of using an iron compound catalyst for inhibiting generation of dioxin, which iron compound catalyst comprises iron oxide particles, iron oxide hydroxide particles or mixed particles thereof having a catalytic activity capable of converting not less than 15 % of carbon monoxide into carbon dioxide when  $2.8 \times 10^{-4}$  mol of iron oxide particles obtained by heat-treating said iron compound catalyst in air at a temperature of  $800^{\circ}\text{C}$  for 15 minutes, are instantaneously contacted with  $6.1 \times 10^{-7}$  mol of carbon monoxide at a temperature of  $250^{\circ}\text{C}$  at a space velocity (SV) of  $42,400 \text{ h}^{-1}$  in an inert gas atmosphere using a pulse catalytic reactor,

said iron oxide particles or said iron oxide hydroxide particles having an average particle size of 0.01 to  $2.0 \mu\text{m}$ , a BET specific surface area of 0.2 to  $200 \text{ m}^2/\text{g}$ , a phosphorus content of not more than 0.02 % by weight, a sulfur content of not more than 0.6 % by weight and a sodium content of not more than 0.5 % by weight.

15. A method of using an iron compound catalyst for inhibiting generation of dioxin, comprising aggregates, which aggregates comprise iron oxide particles, iron oxide hydroxide particles or mixed particles thereof having a catalytic activity capable of converting not less than 15 % of carbon monoxide into carbon dioxide when  $2.8 \times 10^{-4}$  mol of iron oxide particles obtained by heat-treating said iron compound

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catalyst in air at a temperature of 800°C for 15 minutes, are instantaneously contacted with  $6.1 \times 10^{-7}$  mol of carbon monoxide at a temperature of 250°C at a space velocity (SV) of 42,400 h<sup>-1</sup> in an inert gas atmosphere using a pulse catalytic reactor,

said iron oxide particles or said iron oxide hydroxide particles having an average particle size of 0.01 to 2.0  $\mu\text{m}$ , a BET specific surface area of 0.2 to 200 m<sup>2</sup>/g, a phosphorus content of not more than 0.02 % by weight, a sulfur content of not more than 0.6 % by weight and a sodium content of not more than 0.5 % by weight, and

said aggregates having a specific surface area of not less than 1.0 m<sup>2</sup>/cm<sup>3</sup> when measured under a feed pressure of 1 bar in a dry granulometer, and an average particle size (D<sub>50</sub>) of 50 % of a total volume thereof, of not more than 8.0  $\mu\text{m}$ .

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